

3. Claims 12 and 16 under 35 USC §103(a) as unpatentable over APA, Maeda and U.S. Patent 5,548,091 to DiStefano (hereinafter "DiStefano");

4. Claims 3, 4 and 13 under 35 USC §103(a) as unpatentable over APA, Maeda and JP 4302444 to Koga (hereinafter "Koga"); and

5. Claims 14 and 17 under 35 USC §103(a) as unpatentable over APA, Maeda, Koga and U.S. Patent 5,115,545 to Fujimoto et al. (hereinafter "Fujimoto et al.").

Applicants respectfully traverse these rejections.

Maeda discloses a method of adhering leadless electrical parts in which the adhesive is heated prior to mounting of the leadless electrical parts in order to increase the viscosity of the adhesive. Then, after mounting of the leadless electrical parts on the adhesive, heat or radioactive rays are applied to the printed wiring board. Pg. 7, lines 7-21 disclose that the first heating process "is carried out from an upper place by a far-infrared-rays heater 4", as shown in Fig. 2(b). Furthermore, pg. 7, lines 22-31 disclose that the second heating process is carried out by applying ultraviolet rays for 15 seconds by a high-pressure mercury lamp having a reflecting plate 7. Line 30 specifically refers to this heating as a "radiating process".

Summarizing, Maeda teaches the step of heating an insulating adhesive to increase the viscosity thereof so as to prevent electrical parts from moving. However, Maeda fails to teach or suggest that the electrical parts are held with pressure, as in the present invention.

Accordingly, claims 11 and 15 have been amended to recite that the chips are held with a pressure while the thermosetting insulating adhesive is hardened to the half-thermosetting state. Thus, it is possible to precisely position and hold the chips during the production process. It is to be noted that the claimed invention does not require control of the viscosity of the adhesive to prevent the chips from moving.

DiStefano has been cited for teaching a heating step performed by a heat plate 58 on which a substrate is placed.

DiStefano is not combinable with Maeda to teach the present invention because, while DiStefano discloses conductive heating, which requires pressure, Maeda specifically discloses radiative heating without pressure.

Koga discloses a mounting method for a semiconductor element including a "heating heater 27" and, like DiStefano, is not combinable with Maeda to teach the present invention because Maeda specifically discloses radiative heating without pressure.

Fujimoto et al. has been cited for teaching a single bonding head 52 for each chip "without the need for using heat or supersonic waves" (see Abstract of Fujimoto et al.), which teaches away from the two heating steps claimed in the present invention.

None of the cited references teaches, mentions, or suggests the two-step heating with pressure applied to the semiconductor chips as recited in claims 11 and 15, as amended, and none of the cited references teaches, mentions, or suggests the relationship between the pressure applied in the two heating steps, as recited in the amendments to claim 15.

Thus, the §102(b) and §103(a) rejections should be withdrawn.

In view of the aforementioned amendments and accompanying remarks, claims 3-6 and 8-17, as amended, are in condition for allowance, which action, at an early date, is requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed, Applicants' respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees which may be due with respect to this paper, may be charged to Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, WESTERMAN, HATTORI,  
McLELAND & NAUGHTON



William L. Brooks  
Attorney for Applicants  
Reg. No. 34,129

Atty. Docket No. 950107A  
Suite 1000  
1725 K Street, N.W.  
Washington, D.C. 20006  
Tel: (202) 659-2930  
WLB:ylw:mlg